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# CHAPTER 1

## INTRODUCTION

### 1.1 PURPOSE OF THIS GUIDANCE MANUAL

The purpose of this guidance manual is to help you develop and implement a Storm Water Pollution Prevention Plan specifically designed for your construction site. With the help of this guidance you should be able to put together most aspects of the plan using your own construction managers and engineers.

As part of its efforts to expand the use and benefits of pollution prevention practices, the U.S. Environmental Protection Agency (EPA) expects that most National Pollutant Discharge Elimination System (NPDES) storm water permits for construction activities, both individual and general permits, may require this type of plan, including the NPDES General Permit for Storm Water Discharges from Construction Activities That Are Classified As "Associated with Industrial Activity" (referred to as EPA's Baseline Construction General Permit). Although specific components of a Storm Water Pollution Prevention Plan may vary from one storm water permit to another, many of the general concepts described in this manual are common to all plans.

### 1.2 ORGANIZATION OF THIS GUIDANCE MANUAL

This manual is organized to function as a user's guide to meet Storm Water Pollution Prevention Plan requirements. The step-by-step guidelines and checklists in the following sections walk you through the process of developing a Storm Water Pollution Prevention Plan. The checklists are designed to help you organize the required information. The remainder of this manual is divided into a number of sections: Chapter 2 provides an overview of the process of developing and implementing a Storm Water Pollution Prevention Plan, and Chapters 3-6 are resources for selecting Best Management Practices (BMPs) and controls to use as part of your plan. Using this information, you will develop and implement your plan following the basic phases listed below. Each phase is important and should be completed before moving on to the next one:

- Site Planning and Design Development Phase
- Assessment Phase
- Control Selection/Plan Design Phase
- Notification/Approval Phase
- Implementation/Construction Phase
- Final Stabilization/Termination Phase

Developing a Storm Water Pollution Prevention Plan is, therefore, a six-phase process. Because most aspects of the Storm Water Pollution Prevention Plan take a significant amount of planning, its development must be closely connected to the development of your overall site plan for construction. You must keep storm water considerations in mind as you develop your site plan. The Initial Site Planning/Design Development Phase starts the process. The next phase, the Assessment Phase, involves gathering information about your site, such as determining drainage patterns and runoff coefficients. Then you will enter the Control Selection/Plan Design Phase, using the information collected during the Assessment Phase to select BMPs. Following Control Selection and Plan Design is the Certification/Notification Phase. In this phase the plan is certified by the owner and operator of the construction project and a notice is sent to the government agency which is responsible for NPDES permits in your area. The next stage is the Implementation/Construction Phase, during which you put your Storm Water Pollution Prevention Plan to action and construct your facility. Periodic reviews, inspections, and evaluations will allow you to keep the plan up-to-date and effective. Finally, as construction activities are completed, you reach the Final Stabilization/Termination Phase during which you put into place permanent controls.

Chapter 5 provides recommendations to assist the readers in selecting the most appropriate BMPs. A combination of these types of BMPs may be most appropriate for your site.

In addition, there are a few appendices included in the back of this manual. Appendix A includes checklists relating to specific elements of Storm Water Pollution Prevention Planning. Appendix B provides technical design specifications for the BMPs described in Chapters 3 and 4. Appendix C shows what a model plan should look like. Appendix D lists references and resources. Appendix E contains a glossary of terms. Appendix F contains a list of hazardous substances and reportable quantities. Appendix G lists references for rainfall data. Appendix H lists efficiencies for several types of BMPs.

### **1.3 DEFINITIONS**

Throughout this manual you will see four key words and phrases used over and over. A solid understanding of these concepts is very important in meeting the goals of storm water management discussed above.

The first term of importance is "Storm Water Pollution Prevention Plan (SWPPP)." As mentioned in Section 1.1, this manual is designed to help you to prepare and implement a Storm Water Pollution Prevention Plan. As you will learn in Chapter 2, storm water pollution prevention consists of a series of phases and activities to, first, characterize your site, and then, to select and carry out actions which prevent the pollution of storm water discharges.

The next term is NPDES Storm Water Permit or permit. NPDES is an acronym for National Pollutant Discharge Elimination System. NPDES is the National program for issuing, modifying, revoking, etc., permits under Sections 307, 318, 402, and 405 of the Clean Water Act (CWA). A permit is an authorization issued by EPA or an approved State to discharge under certain specified conditions.

The other term used throughout this manual is "Best Management Practice" or BMP. BMPs are measures or practices used to reduce the amount of pollution entering surface waters, air, land, or ground waters. BMPs may take the form of a process, activity, or physical structure. Some BMPs are simple and can be put into place immediately, while others are more complicated and require extensive planning. They may be inexpensive or costly. This manual describes numerous BMPs which you may use as part of your Storm Water Pollution Prevention Plan.

The final term used frequently in this manual is "operator." The operator of a construction activity is the party or parties that either individually or taken together meet the following two criteria: (1) they have operational control over the site specifications (including the ability to make modifications in specifications); and (2) they have the day-to-day operational control of those activities at the site necessary to ensure compliance with plan requirements and permit conditions (e.g., are authorized to direct workers at the site to carry out activities identified in the plan).

## **1.4 GOALS OF EROSION AND SEDIMENT CONTROL AND STORM WATER MANAGEMENT**

EPA's November 16, 1990, storm water final rule addresses certain types of storm water discharges, including storm water discharges from construction activities. This regulation is based on the results of a number of National studies which pointed to storm water discharges as a significant source of pollutants and cause of water use impairment in receiving streams. Storm water runoff becomes polluted by picking up soil particles and other pollutants (from construction materials) as it flows over surfaces where construction activities are occurring. By requiring certain construction sites to apply for NPDES storm water permits, this regulation provides a way for States and EPA Regions to monitor and manage these discharges, and reduce or ultimately eliminate the amount of pollutants present in them. The basic goal of storm water management, therefore, is simple:

**IMPROVE WATER QUALITY BY REDUCING POLLUTANTS IN STORM WATER DISCHARGES**

Construction activities produce many different kinds of pollutants which may cause storm water contamination problems. Grading activities remove grass, rocks, pavement and other protective ground covers resulting in the exposure of underlying soil to the elements. Because the soil surface is unprotected, soil and sand particles are easily picked up by wind and/or washed away by rain or snow melt. This process is called erosion. The water carrying these particles eventually reaches a stream, river or a lake where it slows down, allowing the particles to fall onto the bottom of the stream bed or lake. This process is called sedimentation. Gradually, layers of these clays and silt build up in the stream beds choking the river and stream channels and covering the areas where fish spawn and plants grow. These particles also cloud waters causing aquatic respiration problems and can kill fish and plants growing in the river stream.

In addition, the construction of buildings and roads may require the use of toxic or hazardous materials such as petroleum products, pesticides, and herbicides, and building materials such as asphalt, sealants and concrete which may pollute storm water running off of the construction site. These types of pollutants often contain small amounts of metals and other toxic materials which may be harmful to humans, plants, and fish in streams.

Considering the nature of construction activities and the resulting pollutants, and the variable nature of storm events, EPA determined that the best approach to storm water management for these sites is through the use of self-designed Storm Water Pollution Prevention Plans. These plans are based on the use of BMPs. For construction sites, there are three main types of BMPs, those that prevent erosion, others which prevent pollutants from the construction materials from mixing with storm water, and those which trap pollutants before they can be discharged. Although these three types of BMPs have different functions, the basic principle is the same: these BMPs are designed to prevent, or at least control, the pollution of storm water before it has a chance to affect receiving streams. Using BMPs in this way is called storm water management or sediment and erosion control.

## **1.5 LIMITATIONS OF THIS MANUAL**

This manual provides useful information on many sediment and erosion and storm water management controls which you can use to prevent or reduce the discharge of sediment and other pollutants in storm water runoff from your site. This manual describes the practices and controls, tells how, when, and where to use them, and how to maintain them. However, the effectiveness of these controls lies fully in your hands. Although specific recommendations will be offered in the following chapters, keep in mind that careful consideration must be given to selecting the most appropriate control measures based on site-specific features, and on properly installing the controls in a timely manner. Finally, although this manual provides guidelines for maintenance, it is up to you to make sure that your controls are carefully maintained or they will prove to be ineffective.

This manual describes some of the EPA Baseline General Permit requirements for pollution prevention plans. However, requirements may vary from permit to permit. You should read your permit to determine the required components of your pollution prevention plan. This manual does describe "typical" permit requirements. However, do not assume that the typical permit requirements described in this manual are the same as your permit requirements, even if you are included under an NPDES general permit for storm water discharges from construction activities that are classified as "Associated with Industrial Activities." Permit conditions may vary between different permits and/or different versions of the permit.

This manual also does not describe State or local requirements for erosion and sediment control or for storm water management. Although it is expected that, in most cases, plan requirements will be similar, you should contact your State or local authorities to determine what their requirements are.

EPA has issued a number of regulations addressing pollution control practices for different environmental media (i.e., land, water, air, and ground water). However, this manual focuses on identifying pollution prevention measures and BMPs specifically for storm water discharges from construction activities and provides guidance to industrial facilities on how to comply with storm water permits.

Although Storm Water Pollution Prevention Plans primarily focus on storm water, it is important to consider the impacts of selected storm water management measures on other environmental media (i.e., land, air, and ground water). For example, if the water table is unusually high in your area, a retention pond for contaminated storm water may also lead to contamination of a ground water source unless special preventive measures are taken. EPA strongly discourages this transfer of pollution from one environmental medium to another and prohibits the adoption of any storm water management practice that results in a violation of other Federal, State, or local environmental laws.

For instance, under EPA's July 1991 Ground Water Protection Strategy, States are encouraged to develop Comprehensive State Ground Water Protection Programs. Your facility's efforts to control storm water should be compatible with the ground water protection objectives reflected in your State's program.

## **1.6 ADDITIONAL INFORMATION**

Although this manual describes many potential control measures for construction sites, there are additional resources. Some references are listed in Appendix D of this manual. Many State and local sediment and erosion control agencies have published BMP documents specifically for construction activities. A few of these are listed in Appendix D. For other documents, State and local agencies should be contacted directly.